The Relationship between Retirement Wealth and Householders' Lifetime Personal Financial and Investing Behaviors

ABSTRACT

While previous research indicates wide wealth dispersion at retirement within households with similar lifetime incomes, there have been few attempts to identify personal financial behaviors associated with retirement wealth in households matched for lifetime income. Householders with similar demographics and lifetime income but differing markedly in net worth near retirement were surveyed in terms of personal financial behaviors undertaken during their lifetime. Results revealed key differences between householders with low and high retirement wealth in their financial behaviors and how these were acquired.

INTRODUCTION

To paraphrase Ferguson (2008), a society that expects individuals to take responsibility for managing their finances and to determine how much to save for retirement is storing up trouble for the future if its citizens are ill-equipped to make wise financial decisions. The "future" may be upon us. While the current financial crisis is often attributed principally to lending practices adopted by the banking sector, it was also caused by unwise borrowing decisions made by the public (Ferguson, 2008; Mishkin, 2008). To enhance such decision making, the government has proposed a policy of fostering financial and economic education for the consumer (Bernanke, 2011). Most current education programs subscribe, often implicitly, to a four-part model of education in which 1) financial education aims to increase 2) financial knowledge, which improves 3) financial behaviors and decision-making (henceforth, behaviors), which, in turn, enhance 4) financial outcomes such as dollars saved (Bell et al. 2009; Willis, 2009). Many studies of the efficacy of financial literacy education have used a forward-working (i.e., deductive) approach (Collins and O'Rourke, 2010). This approach typically starts with an idea (which is not necessarily empirically based), from which an intervention is derived that provides individuals with financial education (i.e., Part 1 of the model) thought to enhance target variables. These target variables are usually one or more later parts of the model such as financial knowledge. Changes in the target variables are tracked via pre- and post-intervention measures as tests of intervention efficacy.

Advocated here is a complementary backward-working (i.e., inductive) approach, which is informed by the *Expert Performance Approach* proposed by Ericsson and Smith (1991) in the field of psychology. One goal within the Expert Performance Approach is to identify the developmental experiences (e.g., education and training) and practice activities that led expert

and high level performers within a given domain (e.g., medicine or computer programming) to achieve their level of performance. The rationale underlying the approach is that, within a given domain, identification of developmental experiences and practice activities associated with high levels of performance provides an empirical basis for the content of educational programs. One method used to identify these development experiences and practice activities involves contrasting very high performers within a given domain with those performing at much lower levels in terms of their retrospective recall of these experiences and activities.

Consider this approach applied to personal finance. The first step in the approach would involve identifying households with very high and very low levels of financial performance (operationalized as financial outcomes; Part 4 within the four-part model of financial education). The next step would be to contrast the developmental experiences (operationalized as financial education activities; Part 1 of the model) and practice activities (operationalized as financial behaviors; Part 3 of the model) of households with high and low levels of financial outcomes. The identification of financial education activities and behaviors that discriminate between high and low levels of financial outcomes would then provide an empirical basis for the content of future educational programs. These programs could be tested using intervention studies; that is, using a more deductive, forward-working approach.

We applied all but the last part of this approach in the present study. First, we obtained a household sample containing households similar in terms of variables affecting wealth accumulation across the lifespan. The variables included: (a) householder demographics such as age, marriage/divorce, and major out-of-pocket medical costs (Adams and Rau, 2011); and (b) householder income variables such as income earned and inheritances received (Hendricks, 2007). Having matched households on key determinants of opportunities to accumulate wealth

over the lifespan, we then identified households with very large differences in household *return* at retirement. Return was defined as the proportion of a household's net worth to its lifetime income. This step was informed by research indicating the existence of large wealth dispersion at retirement for households with a similar lifetime income (e.g., Cole and Shastry, 2009; Hendricks, 2007; Venti and Wise, 2000). The result of this step was a group of households with very high return and a group with very low return. Next, we collected data on the personal financial education activities (e.g., education about personal finance at high school) and personal financial behaviors (e.g., paying credit card bills on time) of the householders within the groups over their lifetime. Finally, we compared the high and low return groups on these activity and behavior variables.

Four hypotheses were tested concerning the relationship between personal financial education activities and behaviors, and household return. The first concerned personal financial education achieved via *financial socialization* (John, 1999; Moschis, 1987). John proposed that children pass through stages of consumer socialization, resulting in an increasingly sophisticated knowledge of advertising, products and brands, shopping skills, enhanced decision-making skills, and a more developed understanding of consumption and materialism. She also proposed that financial socialization can occur via the family, peers, culture, and mass media and marketing. In an alternative conceptualization of these socialization processes, Moschis proposed that young adults learn about financial behavior via informal and formal financial socialization agents. Informal agents include family members and friends, and formal agents include educational establishments. Learning from these agents occurs via three processes: modeling, which involves imitating the agent's behavior; reinforcement, which involves being rewarded or

punished for certain behaviors; and social interaction, a broad category of processes involving encouragement from significant others to adopt certain norms and skills.

Prior research has provided evidence of the influence of informal socialization agents such as the family (Grinstein-Weiss, Spader, Yeo, Taylor, and Freeze, 2011; Lusardi, Mitchell, and Curto, 2010; Shim, Xiao, Barber, and Lyons, 2009). For example, Grinstein-Weiss et al. demonstrated that adults reporting higher levels of parental education about money management during childhood had lower credit-card debt and higher credit ratings during adulthood. Prior research has also provided evidence of the influence of formal socialization agents such as schools (Goldsmith and Goldsmith, 2006; Grimes, Rogers, and Smith, 2010; Shim et al. 2009). For example, Grimes et al. found that high school courses in economics and business reduced the probability that an adult was unbanked. In the present study, we hypothesized that the high return group would report more frequent engagement in education activities reflecting financial socialization than the low return group. The influence of informal socialization agents was measured via two sets of variables. The first concerned *incidental education from significant others*; an example item was "During your lifetime, to what extent did your father discuss personal finance in general conversation?" The second set concerned *guidance and instruction from significant others*; an example item was "During your lifetime, to what extent did your mother talk to you about how to manage your finances effectively?" The influence of formal socialization agents was also measured via two sets of variables. The first concerned *education from formal institutions*; an example item was "Did you receive any education about personal finance at high school?" The second set concerned *education via employers*; an example item was "Have you ever received any education about personal finance from an employer?"

The second hypothesis concerned personal financial education activities related to retirement planning. Research on retirement preparation indicates that financial planning is associated with increased retirement savings (Croy, Gerrans, and Speelman, 2010; Lusardi and Mitchell, 2007; Stawski, Hershey, and Jacobs-Lawson, 2007). For example, Stawski et al. found, in a sample of 100 working adults, that retirement goal clarity was a significant predictor of planning practices, and planning, in turn, predicted savings tendencies.

Stawski et al. (2007) proposed that one form of financial planning involves information-seeking activities, defined as activities yielding information about how to plan such as reading books on personal finance. In the present study, these activities were conceptualized as a form of financial education activity called self-directed education activities. These activities were measured via two sets of variables. The first concerned *self-directed education from significant others*; an example item was "During your lifetime, to what extent did you deliberately seek out information on personal finance from your parents/immediate family?" The second set concerned *self-directed education via media*; an example item was "During your lifetime, to what extent did you deliberately seek out information on personal finance via the internet?" We hypothesized that the high return group would report more frequent engagement in self-directed information seeking activities than the low return group.

The third hypothesis also concerned planning. In addition to information-seeking activities, Stawski et al. (2007) proposed that financial planning could involve instrumental activities, defined as setting appropriate long-term financial goals and monitoring progress towards them. In the present study, instrumental planning was conceptualized as a form of financial behavior and was measured as the extent to which householders forecasted the amount

required to retire. We hypothesized that the high return group would more frequently forecast the amount required to retire than the low return group.

The fourth hypothesis concerned other financial behaviors that have been the foci of previous studies due to their hypothesized positive effect on wealth accumulation (e.g., Bell et al. 2009; Hilgert, Hogarth, and Beverly, 2003). Questions were asked about various financial behavior variables ranging from cash-flow management to health insurance planning. It was hypothesized that, where the groups differed significantly in terms of these financial education activities and behaviors, the high return group would always report more frequent engagement in these activities than the low return group.

The method outlined below followed the Expert Performance Approach. In Phase 1, samples were obtained of low and high return households. In Phase 2, a low return group and a high return group were created from the samples identified in Phase 1. Next, data were elicited from the groups about their financial education activities and behaviors and groups were compared on these data in relation to the study hypotheses.

PHASE 1

Recruitment Procedures

Households responded to newspaper advertisements placed in 22 US states[1] in 2008 and 2009 requesting households meeting the following criteria: Householders are a husband and a wife aged between 51 and 61, have been married over 10 years, have no prior divorces, own a home but not businesses, have never been legally declared bankrupt, have at least one child, and

1. The 22 states in which advertisements were placed were selected from within the eastern and central time zones to facilitate telephone calls to households; the researchers were based in the eastern time zone. Based on 2007-2009 American Community Survey data, when compared to the entire US, on average the states in which advertisements were placed contained more married couple families (50% for the 22 states vs. 49% for the entire US); a higher percentage of white individuals (83% vs. 76%); older individuals (38 years vs. 37 years); households with a lower median income (in 2009 dollars, $47,156 vs. $51,369); and a higher percentage of individuals aged over 25 who graduated high school (32% vs. 29%) but a lower percentage of individuals aged over 25 who held a bachelor's degree (25% vs. 28%).

have no major out-of-pocket medical expenses. Households were offered $50 to participate. Householders (n = 914) who responded were "screened" via telephone to check they met the advertisement criteria and could access a recent Social Security (SS) statement. Checks were made on factors affecting the validity of their SS statement earnings record such as whether householders always earned incomes and paid taxes on them within the US and paid SS taxes (vs. into alternative retirement programs) on their incomes.

Following the screening interview, 594 households were eligible to participate and were mailed a survey packet containing a consent form and instructions for completing a household finances survey. The survey began with a demographics section. Next, questions were asked of each householder related to household lifetime income, current assets, including retirement assets, and current debt; for details, see Appendix A. Of the 594 households mailed a study packet, a signed consent form and survey were returned from 329 (55.4%) households[2]. Of these, 38 were unusable, leaving 291 usable surveys[3].

Household finances survey data were used to compute household return. Computing return required that household lifetime income and household net worth were first computed; details of these computational processes are provided in Appendix B. Two checks on the reliability of the survey data were also undertaken, revealing good reliability overall; details of these checks are available from the authors. Household return was then computed as the proportion of a household's net worth to the value of its lifetime income.

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2. We knew little about the households from which a survey was not returned other than that they likely met the criteria for participation as a check on these criteria was made by telephone before these households were mailed a survey. Therefore, we could not compare households from which a survey was returned with those from which a survey was not returned. Nonetheless, note that the focus within this study is on understanding differences in personal financial educational activities and behaviors *within* the household sample obtained.

3. Households that had returned the surveys with missing or poorly specified responses were contacted by telephone in an attempt to obtain the required data. Notwithstanding, we were unable to collect data on all variables for 20 surveys, so these surveys were excluded. Another 18 surveys were excluded because, despite the screening interview, demographic data provided in the survey revealed that not all criteria for participation were met. The modal criterion not met was that householders had no prior divorces.

Samples of households with the largest differences in return were identified next. To ensure that households identified as having the largest differences in return were representative of the entire sample of households in terms of lifetime income, the household lifetime income variable was split into quartiles, the lowest of which contained 72 households and remaining three quartiles 73 households each. Within each quartile, the 12 households with the lowest return value and the 12 households with the highest return value were then identified to form a sample of low return households (n = 48) and high return households (n = 48), respectively. Table 1 displays the minimum and maximum values for household lifetime income, net worth, and return by sample and quartile of household lifetime income. Note that values in all tables and the text are in 2009 dollars. Mean lifetime income (in thousands) for the samples was very similar: The value was \$3,044 (SD = \$982) for the low return sample and \$3,069 (SD = \$1,039) for the high return sample; the difference was not significant (α = .05, t = .21, p = .904; Pearson's r, a measure of effect size, was .01). By contrast, the mean net worth (in thousands) of the high return sample (M = \$2,354, SD = \$1,054) was nearly four times that of the low return sample (M = \$642, SD = \$247); the difference was significant (α = .05, t = 13.98, p < .001, r = .82).

[Insert Table 1 about here]

PHASE 2

Personal Financial Activities Survey

Each household within the low and high return samples identified in Phase 1 was offered \$150 to complete a personal financial activities survey. The aim was to obtain 41 participating households from each sample[4]. For each of the two samples, householders in 41 from 48

4. An *a priori* power analysis revealed that, to detect a moderate effect (r = .30) with a power of .80 within a two-tailed independent samples t test, the total sample size required was 82 at an alpha level of .05; we obtained a total sample size of 81. We accepted that we would be able only to detect larger effect sizes when alpha was made more conservative within analyses of multiple variables.

households agreed to participate and were mailed a packet containing instructions asking the husband and wife to each complete the survey. The survey measured personal financial education activities and behaviors undertaken by householders during their lifetime. Survey questions concerning financial learning activities asked about frequency during the lifetime of: guidance and instruction from significant others; education from formal institutions; education via employers; self-directed education from significant others; and self-directed education via media. A list of activities about which questions were asked can be seen in Tables 7 to 9. Survey questions concerning financial behaviors asked about frequency during the lifetime of: cash-flow management behaviors; credit management behaviors; savings behaviors; investment behaviors; and comparison shopping, health insurance planning, and estate management. A list of behaviors about which questions were asked can be seen in Table 10. Responses to questions about frequency of an activity/behavior during the lifetime were made via "yes/no" response options or 5-point scales ranging from 1 (never) to 5 (always).

Participant Households

Forty (from 41) households in the low return sample and 41 (from 41) in the high return sample returned completed surveys. These households constituted the low return group and the high return group, respectively (henceforth, the *low group* and *high group*, respectively).

Household Demographics and Finances

Our objective was to obtain two groups of households with similar demographics. The groups' demographics are compared here to check this objective was met. All households contained a husband and wife who were homeowners but not business owners, had no prior divorces, and reported no history of major out-of-pocket medical costs. There was no meaningful difference in ethnicity between groups: 39 households in each group contained 2 white

householders; 1 household in the low group and 2 households in the high group contained 1 white and 1 non-white householder; and no household in the low group and 1 household in the high group containing 2 non-white householders. In terms of household location in the US, 16 households in the low group and 13 in the high group were located in the midwest or west, 3 in each group in the northeast, and 21 in the low and 25 in the high in the south. A chi square test revealed no significant group differences in geographic location. Median household income in the geographic area of each household was identified[5]. The mean value for this variable was $63,175 (*SD* = $5665) for the low group and $61,954 (*SD* = $6147) for the high group; the difference was not significant, t (79) = .93, p = .356, r = .10. As Table 2 shows, groups were compared on demographic variables using independent sample *t*-tests. Alpha was adjusted using the Bonferroni correction to .007 (.05/7). Groups did not differ significantly on any variable.

[Insert Table 2 about here]

Table 3 displays employment type data for the husbands and wives in each group. As the public sector is associated with better retirement plan provision, we compared groups in terms of their employment in this sector. To this end, we created a "household employment sector" variable, at the household level, with three categories: neither, one, or both householders employed in the public sector. Neither householder was employed in the public sector in 31 households in the low group and in 20 in the high group; one householder was employed in the public sector in 8 households in the low group and in 15 in the high group; and both householders were employed in the public sector in 1 household in the low group and in 6 in the high group. Fisher's exact test showed that the distribution of households across these categories

5. Based on 2007-2009 American Community Survey data in 2009 dollars. 76 households were located in metropolitan statistical areas and 2 households in micropolitan statistical areas. 3 households were located outside of these areas; county-level data were used for these households.

differed significantly between the groups ($n = 81$, $p < .05$). Follow up exact tests (for which alpha was adjusted from .05 to .013) revealed that the largest group difference was between the "neither in public sector" and "both in public sector" categories, although this difference was not significant ($n = 58$, $p = .038$).

[Insert Table 3 about here]

Data on the education level of the householders in each group are displayed in Table 4. Groups were compared on this variable using a chi square analysis. The two lowest education levels were collapsed to achieve sufficient cell sizes. As Table 5 shows, groups differed significantly on this variable. Post-hoc comparisons revealed only that the high group contained significantly more households than the low group in which both householders received post-college education and significantly fewer households in which the highest level of education of either householder was an associate's degree.

[Insert Tables 4 and 5 about here]

In summary, the two groups of participating households were similar on a range of demographic variables with two exceptions, which were employment sector and education level.

Table 6 illustrates how the groups were similar (i.e., not significantly different) on household lifetime income, which was the denominator in the computation of return, and significantly different on household net worth, which was the numerator in the computation of return. The mean annual household income of the low group was $104,348 ($SD$ = $50,737) and the high group was $135,282 ($SD$ = $52, 577). On average, the households in these groups are within the top 40% of US households in terms of household income, given the age of the

householders, according to the Census Bureau data for 2006[6]. Groups did not differ significantly for total lifetime income[7] but did for net worth: The net worth of the high group was nearly 4 times that of the low group. The high group had approximately 2.5 times the non-retirement assets and 3 times the retirement assets of the low group on average. In terms of retirement assets, groups were similar on average in terms of SS wealth, reflecting their similar lifetime earnings, but differed markedly in non-SS retirement assets. As Table 6 shows, the high (vs. low) group held on average over 4 times more IRA wealth and 10 times more wealth in terms of both defined benefit (DB) and defined contribution (DC) plans. All 41 households in the high group held wealth in DB and/or DC plans; only 31 from 40 households in the low group held wealth in one or both of these types of plan, although 2 of the 9 households that did not hold such wealth held alternative non-SS retirement wealth. Finally, the low group had significantly more debt overall and significantly more mortgage and credit card debt in particular[8].

[Insert Table 6 about here]

Group Differences in Personal Financial Education Activities and Behaviors

A separate analysis was conducted on the survey data from the husband and wife. Group differences on variables involving "Yes/No" data were analyzed using chi square tests. Group

6. According to the Census Bureau, Current Population Survey, Annual Social And Economic Supplement (2007), in 2006, 34.1% of family households with householders aged 55-59 year olds had a total household income exceeding $100,000, which is $106,417 in 2009 dollars

7. Group differences were explored in the number of years a householder earned above the Medicare tax maximum, given the potentially confounding effect of this variable. The number of years for which earnings were above the maximum for householders in the low group (M = .98, SD = 2.65) and high group (M = .70, SD = 2.42) was not significantly different: t (160) = .70, p = .483, r = .06.

8. Having noted that the high (vs. low) group contained more households in which one or both householders were employed in the public sector, which may indicate that the high group had better access to retirement plans, readers may be concerned that DB and DC wealth accounted for the majority of the difference in household net worth between the groups. Two points need to be considered in this regard. First, although the high group held much more DB and DC wealth, comparisons of other household assets were in the same direction; that is, the high (vs. low) group had more non-retirement and IRA wealth and less debt. Also, the difference in the groups' debt would be more pronounced if "loans for other real estate" was removed from the debt computation on the basis this form of debt could be considered a marker of wealth. Second, employment sector (i.e., public sector vs. other sectors) is included as a control variable in some analyses that follow.

differences on variables involving 5-point scale data were analyzed using independent samples *t*-tests when assumptions for parametric tests were met and Mann-Whitney tests when these assumptions were not met. Alpha was set at .05 but adjusted using the Bonferroni correction if multiple comparisons were undertaken within a financial education activity or behavior category. Cohen's (1988) guidelines are used to interpret effect sizes, which are expressed as Pearson's *r* or Cramer's *V* depending on the statistical test used.

Test of Hypothesis Related to Financial Socialization

We hypothesized that the high (vs. low) group would report more frequent engagement in education activities reflecting financial socialization via informal and formal socialization agents. The influence of informal socialization agents was measured via two sets of variables. The first set concerned *incidental education from significant others*. As shown in Table 7, there was no significant group difference for the husbands or wives for any variable concerned with incidental education from significant others. The second set of variables concerned *guidance and instruction from significant others.* There was a significant group difference on one of these variables for the wives. On average, wives in the high group reported that their romantic partner(s) talked to them "often-to-always" about how to manage their finances effectively, which was significantly more than for the wives in the low group, who reported that this happened "sometimes-to-often"; the effect size was close to medium. The influence of formal socialization agents was also measured via two sets of variables. The first set concerned *education from formal institutions.* As shown in Table 8, there were no significant group differences for the husbands or wives in terms of education from formal institutions. The second set of formal socialization variables concerned *education via employers*. There was a significant group difference on one of these variables for the wives. Significantly more wives in the high

group (19/41) than the low group (8/40) reported being referred by an employer to a financial professional during the lifetime; the effect size was close to medium. Overall, there was some support for the hypothesis that the high (vs. low) group would report more frequent engagement in education activities reflecting financial socialization, as the wives in the high group reported more frequent engagement in two of these activities.

[Insert Tables 7 and 8 about here]

Test of Hypothesis Related to Retirement Planning

We hypothesized that the high (vs. low) group would report more frequent engagement in self-directed information-seeking activities related to retirement planning. These financial education activities were measured via two sets of variables. The first set concerned *self-directed education from significant others* and the second set concerned *self-directed education via the media*[9]. As Table 9 shows, there was a significant group difference on one of these variables. The size of this effect was medium. Wives in the high group reported seeking information from an employer "sometimes-to-often" during the lifetime, which was more frequently than the wives in the low group, who reported doing this "rarely-to-sometimes." Thus, there was some support for the hypothesis that the high group would report more frequent engagement in self-directed information-seeking activities. There was also support for the hypothesis that the high (vs. low) group would report more frequent engagement in instrumental planning for retirement in the form of forecasting the amount required to retire. As illustrated in Table 9, husbands in the high group engaged in this activity "sometimes-to-often," which was significantly more than

9. Research indicates that reports of activities in general (i.e., over the lifetime) are less reliable than reports of activities in relation to specific events or constrained timeframes (Ericsson & Simon, 1980). As an assessment of reliability, in addition to asking about self-directed education via media activities over the lifetime, we also asked about engagement in these activities over the last 4 weeks. Mean correlations between these variables across the five media activities were as follows: In the low group, .53 for the husbands and .39 for the wives; in the high group, .60 for the husbands and .62 for the wives. In sum, reliability was quite good overall and better in the high group.

those in low group, who engaged in the behavior "rarely-to-sometimes"; the effect size was large. Also, while wives in both groups engaged in this activity "rarely-to-sometimes," the value for the high group was significantly higher than for the low group; the effect size was close to medium.

[Insert Table 9 about here]

Test of Hypothesis Related to Various Personal Financial Behaviors

The hypothesis that the high group would report more frequent engagement in financial behaviors than the low group received some support. As Table 10 shows, the high (vs. low) group reported significantly greater engagement in certain cash-flow management, credit management, savings, and investment behaviors. Specifically, wives in the high group paid bills on time significantly more than those in the low group; the effect size was medium. Husbands and wives in the high group paid their credit card balances in full "often-to-always" during their lifetime, which was significantly more than those in the low group, who paid their card balances in full "sometimes-to-often"; the effect sizes were close to large[10].

Husbands in the high (vs. low) group engaged in each savings behavior significantly more during the lifetime. Mean response values were positioned between "sometimes" and "often" for husbands in the low group but between "often" and "always" for those in the high group for: "owned and saved into savings account(s)," "built and maintained an emergency fund," "saved money out of each paycheck"; and "saved for long-term goals"; the effect sizes were medium or close to large. For the "paid extra towards mortgage principal" variable, mean

10. As in the previous footnote, in addition to asking about paying bills and credit cards on time over the lifetime, we asked about bill and credit card deadlines missed over the last 12 months as an assessment of reliability. The correlation between the bill variables for the low group was -.57 for the husbands and -.56 for the wives. In the high group, nearly all husbands and wives reported always paying bills on time during their lifetime and missing no bill deadlines in the last 12 months. Thus, reliability was good. The correlation between the credit card variables was -.57 for the husbands and -.56 for the wives in the low group; and -.62 for the husbands and -.50 for the wives in the high group. In sum, reliability was quite good.

response values were positioned between "rarely" and "sometimes" for the husbands in the low group but between "sometimes" and "often" for those in the high group; the effect size was close to medium. Similar results were found for the wives. Mean response values were positioned between "sometimes" and "often" for the wives in the low group but between "often" and "always" for those in the high group for: "owned and saved into savings account(s)" and "saved money out of each paycheck"; the effect sizes were medium. Also, mean response values were positioned between "rarely" and "sometimes" for the wives in the low group but between "sometimes" and "often" for those in the high group for the "saved for long-term goals" and "paid extra towards mortgage principal" variables; the effect sizes were medium.

Finally, husbands in the high group calculated their net worth "sometimes" or "often," which was significantly more than those in the low group, who reported engaging in this behavior only "rarely" or "sometimes"; the effect size was medium.

[Insert Table 10 about here]

The Influence of Employment Sector and Household Education Level

Recall that, while groups were similar on most demographic variables, they differed in terms of employment sector and household education level. It would have been cumbersome to include these variables within all analyses presented above of group differences in financial education activities and behaviors. Alternatively, hierarchical regression analyses were used to identify whether specific financial education activities and behaviors predicted household net worth after controlling for household education level, employment sector, and lifetime income. The personal financial activities and behaviors included within these analyses were those for which significant group differences were revealed in the previous section (e.g., paid bills on time). Within the analyses, household net worth was natural log transformed to reduce

heteroscedasticity. As Table 11 illustrates, for the husbands, all financial behavior variables significantly predicted household net worth. The effects of the significant predictors were weak to close to large (*r* ranged from .17 to .45), with the largest contribution from the extent to which the husbands forecasted the amount required to retire. For the wives, seven from ten financial education activity or behavior variables significantly predicted household net worth; see Table 12. The effects of the significant predictors were weak to moderate (*r* ranged from .10 to .33), with the largest contribution from the extent to which wives paid credit cards in full each month. In summary, after controlling for the effect of household education level, employment sector, and lifetime income, all personal financial educational activities and behaviors for the husbands and most personal financial educational activities and behaviors for the wives remained significant predictors of household net worth near retirement.

[Insert Tables 11 and 12 about here]

DISCUSSION

Two groups of households similar in terms of key factors affecting the opportunity to build household wealth but differing markedly in wealth nearing retirement were contrasted in terms of householders' personal financial education activities and personal financial behaviors. Results revealed differences between householders with low wealth (i.e., those in the low group) and householders with high wealth (i.e., those in the high group) in terms of engagement in certain activities and behaviors during their lifetime.

Four specific hypotheses were tested. The first concerned personal financial education achieved via financial socialization (see Moschis, 1987). It was hypothesized that the high group, compared to the low group, would report more frequent engagement in education activities that reflected financial socialization via informal and formal socialization agents. Some support was

provided for the hypothesis concerning informal agents. Wives in the high group, compared to the low group, reported that their romantic partner(s) talked to them more often about how to manage their finances effectively. Furthermore, considering the entire sample of wives (i.e., with groups collapsed), the effect of this activity on household net worth was significant after controlling for other variables that might influence behavior and opportunity (i.e., household education level, employment sector, and lifetime income).

While we are unaware of any prior studies showing that romantic partners can serve as informal agents of financial socialization, previous studies have indicated that alternative significant others (e.g., parents) can serve this role (e.g., Grinstein-Weiss et al. 2011). Research to date has provided evidence of gender differences in financial knowledge, with men being more knowledgeable than women (Lusardi and Mitchell, 2008; Zissimopoulos, Karney, and Rauer, 2008). We did not measure financial knowledge in the present study but we did measure financial education activities, which are proposed to lead to financial knowledge, and it is clear from Table 9 in particular that the husbands engaged in various financial education activities more frequently than the wives. This makes it reasonable to assume that the husbands were more knowledgeable about personal finance than the wives, consistent with prior research. Consequently, our finding that the romantic partner(s) of the wives in the high (vs. low) group talked to the wives more often about how to manage their finances effectively might be explained by the husbands in the high (vs. low) group more actively sharing their comparatively enhanced financial knowledge with their wives. A difference in knowledge sharing between the groups might explain why the wives in the high group engaged in certain financial behaviors more than those in the low group. For example, the wives in the high group paid their credit card balances in full significantly more often than those in the low group. Considering the entire

sample of wives, the effect of this activity on household net worth was significant after controlling for other variables that might influence behavior and opportunity. Research has shown that, on average, women are more likely than men to not pay their monthly credit card balances in full (Mottola, 2012). However, when men and women possess a good knowledge of personal finance, their credit card behaviors are much more similar; specifically, financially knowledgeable men and women both tend to pay their monthly credit card balances in full (Mottola, 2012). If the husbands in the high (vs. low) group more actively shared their comparatively enhanced financial knowledge with their wives, one benefit might have been a decrease in costly credit card behaviors by the wives. Nonetheless, as an anonymous reviewer commented, the finding that romantic partner(s) of the wives in the high (vs. low) group talked to their wives more often about how to manage their finances effectively may be a correlate of greater household return rather than a cause. The husbands in the high group may have been more knowledgeable about personal finances, leading them to talk more to their wives about this topic; however, as a consequence of their knowledge, the husbands may have assumed sole control of the household finances, so that talking to the their wives about the topic had no effect on household return because the wives played no role in managing the household's finances.

In contrast to evidence of the role of informal agents in financial socialization, this study provided no evidence of the role of formal agents in this regard, which is in contrast with findings from prior research. The provision of classes on economics, business, or personal finance in formal educational settings (e.g., high school) has been shown to be positively associated with financial knowledge and behaviors (e.g., Grimes et al. 2010; Shim et al. 2009), yet the low and high groups in the present study reported very similar levels of financial education from these types of institutions.

The second and third hypotheses concerned education activities related to retirement planning. It was hypothesized that the high group would report more frequent engagement in information-seeking activities (second hypothesis) and instrumental planning activities (third hypothesis) related to retirement planning (see Stawski et al. 2007). There was limited support for the second hypothesis. While wives in the high group reported seeking financial information from an employer more often than those in the low group, when considering the entire sample of wives, the effect of this activity on household net worth was not significant after controlling for other variables that might influence behavior and opportunity. There was some support for the third hypothesis. Husbands and wives in the high group reported forecasting the money required to retire significantly more during their lifetime than those in the low group. Furthermore, considering the entire sample of husbands and, separately, wives, the effect of this behavior on household net worth was significant after controlling for other variables that might influence behavior and opportunity. These results are consistent with the more general finding within research on retirement preparation that instrumental retirement planning activities are associated with increased retirement savings (Croy et al. 2010; Lusardi and Mitchell, 2007; Stawski et al. 2007). For example, our finding for the low group that husbands and wives had forecasted the money required to retire "rarely-to-sometimes" during their lifetime is similar to Lusardi and Mitchell's (2006) finding that less than one-third of a subset of the 2004 Health and Retirement Study (HRS) respondents (aged 51-56 years, similar to our participants) had attempted to "figure out" the money required to retire. Furthermore, our finding that the husbands in the high group reported engaging in this behavior "sometimes-to-often," compared to those in the low group who, as stated, engaged in this behavior "rarely-to-sometimes," is reflected in a related study by Lusardi and Mitchell (2007) of HRS respondents. In this study, the more respondents reported

thinking about retirement, from "hardly at all" through to "a lot," the greater was their reported net worth.

The fourth hypothesis involved other variables concerned with financial education activities and financial behaviors that had been the foci of prior studies due to their hypothesized positive effect on wealth accumulation (e.g., Bell et al. 2009; Hilgert et al. 2003). It was hypothesized that, where groups differed significantly in terms of those activities and behaviors, the high group would always report more frequent engagement in the activities and behaviors than the low group; that is, no significant differences would occur in the opposite direction. This hypothesis received support. While groups did not differ on the personal finance education variable examined, the high group reported significantly greater engagement in certain financial behaviors during their lifetime such as paying credit cards in full each month. Moreover, no significant differences in the opposite direction were revealed. In addition, considering the entire sample of husbands and, separately, wives, the effects of these behaviors on household net worth were significant after controlling for other variables that might influence behavior and opportunity.

The findings presented here can be reconciled with the four-part model of financial literacy education (see Willis, 2009). Although our data do not provide definitive causal evidence of the relationships between financial education activities, behaviors, and outcomes, it is quite feasible that the higher level of financial education activities (Part 1 of the model) observed for the high group (e.g., wives' romantic partners talking to them about managing their finances effectively) led to increases in financial knowledge (Part 2 of the model) in this group. Likewise, this increase in knowledge might have led the high group to the higher level of engagement in financial behaviors (e.g., forecasting the amount needed to retire) observed for

this group (Part 3 of the model). The high group's more frequent engagement in financial behaviors likely affected the group's wealth accumulation positively (Part 4 of the model). For example, forecasting the amount required for retirement might have enabled the high group to compare their current financial status to that required for retirement, providing feedback about required changes to current investment strategies. This likely facilitated preparation for retirement and in turn enhanced wealth accumulation.

One limitation of the study concerns the representativeness of the sample. The recruitment criteria (e.g., homeownership) and recruitment means (i.e., via newspapers) resulted in a relatively well-educated sample with incomes greater than national averages. Furthermore, the recruitment criteria required participants to be able to access Social Security Administration and other financial statements; thus, participants must have possessed at least baselines levels of financial organizational and planning skills.

A second limitation of this study is that, despite attempts to control a range of key demographic and financial factors thought to affect opportunities to accumulate wealth, the full history of the sample households is not known. The full range of factors and life events that reduced discretionary income in the low group or increased it in the high group is unlikely to have been captured in its entirety by our survey methods. For example, dependants other than children such as aging parents were not considered. Anonymous reviewers also remarked that householders in the high (vs. low) group may have had better access to retirement plans because more householders in this group were employed in the public sector. In line with this, a larger proportion of the net worth of the households in high group came from DB and DC plan wealth. However, we controlled for the effect of employment sector within our regression analyses with the result that all personal financial educational activities and behaviors for the husbands and

most personal financial educational activities and behaviors for the wives remained significant predictors of household net worth near retirement. It is also worth noting that, although the high group held more DB and DC plan wealth than the low group, comparisons of other household assets were in the same direction. Compared to the low group, the high group had 2.5 times more non-retirement wealth, 4 times more IRA wealth, and 1.5 times less debt.

Finally, we did not include in our study constructs such as risk tolerance and future-orientation. We appreciate that these constructs impact retirement preparation and as such should be considered in future studies.

We believe that our research findings have relevance for policies concerning retirement security. In this study, as in previous studies, differences in retirement planning and household savings behaviors provide potential explanations for why household assets differ and why some individuals approach retirement much better prepared than others. From a policy perspective, this implies that government-based and other programs of consumer education that target retirement planning and, in turn, saving may be efficacious in stimulating consumers to prepare for retirement. These programs should also highlight the benefits of proactive financial knowledge sharing between householders and careful use of high interest debt such as credit cards.

The backward-working approach used in this study provides an empirical basis for the design of interventions aimed at enhancing financial outcomes. In other words, by identifying the activities and behaviors that underpin successful personal financial outcomes, as opposed to focusing on what might seem to be appropriate “things to do,” the field of financial education can move one step closer to understanding “what might work.” Continued empirical efforts in this regard will enhance the effectiveness of the government’s policy of fostering financial and

economic education for the consumer and, in doing so, help the consumer make sound financial decisions, manage their own finances, and determine how, and how much to save for retirement.

Appendix A

Information Obtained via Household Finances Survey

Information obtained about income included value of assets owned at age 18; Medicare taxed earnings, as provided on a recent SS statement, for each year from the householder's 18th year to 2007; and, for each year from the householder's 18th year to 2007, value of inheritances and, separately, gifts received. Information about liquid assets included values of money held in checking accounts; saving and money market accounts; CDs; deferred annuities; bonds; mutual funds; and stocks, commodities, options, and futures. Illiquid asset variables included the value of: the primary residence; investment real estate; business real estate; other business related assets; vehicles, boats, and airplanes; miscellaneous material assets (e.g., art); money owed from debtors; and other types of assets. Information concerning retirement assets was obtained about: SS, DB, and DC plans. A recent SS statement was used to report SS benefit eligibility and full retirement age benefit value. Information obtained for DB plans with current employers included: service years with employer; preceding year's income; normal retirement age for the plan; plan generosity rate or "multiplier"; years of final salary earnings used in benefit calculation; estimate of the plan's monthly benefit at normal retirement age, including an indication of whether the value was in today's or future dollars. The same information was obtained for DB plans with past employers; also obtained was the year the householder stopped working for the employer. Information obtained for DC plans included current balance values for plans with current and past employers and values of expected lump sum payouts and years when payouts were expected. Regarding debt, information was obtained on mortgage and loan values on a primary residence and other real estate including business real estate; taxes owed; credit card borrowing; and other loans or liabilities.

Appendix B

Computation of Household Lifetime Income and Household Net Worth

Regarding the computation of household lifetime income, a limitation of taxed Medicare earnings records provided on SS statements is the limit on taxable earnings for Medicare before 1991. This may result in earnings being undervalued for those years. Of the 582 householders providing the household finances survey (i.e., 2 householders × 291 households), earnings data indicated that 148 (25.4%) had at least one year (henceforth, a problem year) before 1991 for which the earnings value was equal to the Medicare tax limit. These householders were contacted to obtain an alternative earnings record for each problem year. Of the 148 householders contacted, 39 provided more definitive values for all problem years, reducing the number of householders with at least one problem year to 109 (18.7% of all householders). Next, for each householder, taxed Medicare earnings reported for each year were inflated to 2009 dollars using Consumer Price Index data from the Bureau of Labor Statistics. The adjusted values were summed across years and householders (i.e., husband and wife). Values of householders' assets owned at age 18, and reported inheritances and gifts, were also adjusted and summed in this way. Then, the values for these variables were summed to derive a household lifetime income value.

To compute net worth, the values of the household's non-retirement assets were first summed. Retirement wealth was considered next. SS wealth was based on several assumptions. A single life annuity was assumed for the husband and the wife. Gender-specific life expectancies at age 65 and mortality rates between the survey date and age 65 were based on Arias (2007). SS benefits were assumed to be fully indexed for inflation. Discounting was based on the average of the 20-year Treasury Inflation Protected Securities (TIPS) for the period July

2004 to May 2009. SS wealth was calculated in two steps. First, based on the expected monthly SS benefit at full retirement age in current dollars, the early retirement benefit at age 65 was calculated. Second, the present value of the expected single life retirement benefit at age 65 was calculated for both the husband and wife including adjustments for mortality between their current age and age 65.

DB pension wealth was based on several assumptions. A single life annuity was assumed for the husband and the wife. Gender-specific life expectancies at age 65 and mortality rates between the survey date and age 65 were based on Arias (2007). DB pension benefits were assumed not to be inflation-indexed. Discounting was based on the average of the 20-year TIPS for the period July 2004 to May 2009. Workers currently covered by a DB plan were assumed to continue working for their employer until age 65. Salaries were expected to grow at 3.9% per year until retirement age, based on the intermediate long run earnings growth rate forecast in the 2009 Social Security Trustees Report.

DB pension wealth was calculated separately for past and current plans. For past plans, the expected monthly benefit at the normal retirement age was determined. The expected monthly pension benefit was utilized if reported. If it was not reported, the expected benefit was calculated by multiplying the plan's generosity rate by years of service by average final salary at termination. Then, the present value of the expected single life retirement benefit at age 65 was calculated for both the husband and wife including adjustments for mortality between their current age and age 65. For current plans, the expected monthly benefit at age 65 was determined. The expected benefit was calculated by multiplying the plan's generosity rate by years of service by average final salary at termination. If the generosity rate was not available, it was imputed by dividing the expected monthly benefit at the normal retirement age by the

product of years of service and expected final salary. Then, the present value of the expected single life retirement benefit at age 65 was calculated for both the husband and wife including adjustments for mortality between their current age and age 65. The component of the DB wealth earned as of the survey date was calculated by multiplying the present value for each plan by the ratio of the current years of service to the expected years of service at age 65.

DC wealth was calculated as the sum of current balances for all plans held. Individual retirement account (IRA) wealth was considered the sum of Roth and other IRAs. The present value of expected future lump sum payouts were discounted by the average of the 20-year TIPS between July 2004 and May 2009. The values of the household's non-retirement and retirement assets were summed to obtain a household net worth value.

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TABLE 1.
Minimum and Maximum Values for Household Lifetime Income, Net Worth, and Return by Sample and Quartile of Household Lifetime Income

	Low Sample*						High Sample*					
	Return		Lifetime Income (Thousands)		Net Worth (Thousands)		Return		Lifetime Income (Thousands)		Net Worth (Thousands)	
Quartile	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1st	.14	.25	$1573	$2418	$241	$531	.59	1.77	$873	$2473	$876	$2076
2nd	.18	.27	$2505	$2936	$472	$738	.54	.80	$2514	$2991	$1,369	$2386
3rd	.16	.28	$3013	$3438	$537	$889	.64	.90	$3007	$3502	$2,064	$3166
4th	.13	.24	$3575	$6307	$588	$1505	.65	1.07	$3620	$5887	$2,663	$5817

*n = 48, with 12 in each quartile. Note. Monetary values are in 2009 dollars.

TABLE 2.

Household Demographic Variables by Group

	Low Group (n = 40)		High Group (n = 41)			
Household Demographic Variable	*M*	*(SD)*	*M*	*(SD)*	*t*	*r*
Average age of husband and wife in years	54.98	(2.55)	55.60	(2.51)	1.11	.12
Number of years householders married	32.83	(4.35)	32.22	(4.18)	.64	.07
Number of children	2.15	(.80)	2.20	(1.03)	1.08	.12
Average age of children in years	25.79	(5.00)	24.72	(3.96)	1.07	.12
Number of male children	.88	(.82)	1.20	(1.17)	1.43	.16
Number of female children	1.28	(.96)	1.00	(.84)	1.38	.15
Number of children living in household	.40	(.67)	.59	(.87)	.22	.03

Note. Groups do not differ significantly on any variable

TABLE 3.

Frequency Distributions of Husbands and Wives by Employment Type and Group

	Husbands		Wives	
Employment Type	Low Group (n = 40)	High Group (n = 41)	Low Group (n = 40)	High Group (n = 41)
Private sector	38	29	25	20
Public sector	2	12	8	15
Unemployed	0	0	1	0
Homemaker	0	0	6	6

TABLE 4.

Frequency Distributions of Households by Highest Level of Education and Group

Level Number	Highest Level of Education	Low Group (n = 40)	High Group (n = 41)
1	Both householders received post-college training	3	13
2	One householder received post-college training	13	16
3	At least one householder received a bachelor's degree or equivalent	15	11
4	At least one householder received an associate's degree or equivalent	6	0
5	At least one householder graduated high school or equivalent	3	1

TABLE 5.

Chi Square Tests of Differences in Frequency Distributions of Households by Highest Level of Education and Group

Comparison	*n*	χ^2	*V*
Level 1 vs. level 2 vs. level 3 vs. level 4/5	81	13.57*	.41
Level 1 vs. level 2[a]	45	3.06	.26
Level 1 vs. level 3[a]	42	6.13	.38
Level 1 vs. level 4/5[a]	26	12.57**	.70
Level 2 vs. level 3[a]	55	.91	.13
Level 2 vs. level 4/5[a]	39	6.17	.40
Level 3 vs. level 4/5[a]	36	3.39	.31

[a]Post-hoc comparison *$p < .05$; **$p < .008$ (Bonferroni corrected)

TABLE 6.
Household Financial Variables by Group

	Low Group (n = 40)		High Group (n = 41)				
Household Financial Variable	*M*	*(SD)*	*M*	*(SD)*	*U; z*	*t*	*r*
Return	.20	.03	.78	.22	1640.00; 7.75*		.86
Income							
Household earnings for 2006[#]	$104,348	($50,735)	$135,282	($52,577)	-	2.70**	.29
Assets at age 18	$14,552	($22,127)	$12,027	($21,251)	-	1.04	.12
Value of lifetime earnings	$2,937,877	($1,006,809)	$2,943,678	($1,135,570)	-	.02	<.01
Value of lifetime inheritances and gifts	$58,897	($87,437)	$159,727	($344,625)	-	.94	.11
Total lifetime income	$3,011,326	($1,032,133)	$3,115,431	($1,104,985)	-	.44	.05
Non-retirement assets							
Liquid assets	$49,075	($106,050)	$343,570	($411,589)	-	6.16***	.57
Primary residence	$228,475	($111,256)	$308,870	($132,277)	-	3.19***	.34
Other real estate (not business)	$30,388	($98,915)	$135,202	($225,386)	-	3.19***	.34
Business real estate and other business assets	$121	($767)	$2,927	($18,741)	-	-	-
Other assets	$52,097	($65,732)	$109,022	($208,006)	601.00; 2.07		.23
Total non-retirement wealth	$360,155	($233,769)	$899,590	($535,865)	-	6.62***	.60
Retirement assets							
Social security wealth	$347,358	($71,399)	$387,377	($119,341)	-	1.84	.20
Defined benefit plan wealth	$32,547	($58,930)	$540,558	($459,428)	-	8.55[†]	.69

Defined contribution plan wealth	$52,316	($77,987)	$664,798	($650,751)	-	8.52†	.69
Total independent retirement account wealth	$4,735	($12,004)	$19,008	($35,827)	-	2.64	.29
Other retirement wealth	$837	($4674)	$17,280	($60,252)	737.00; 1.51		.17
Total non-social security retirement wealth	$90,436	($117,284)	$1,241,644	($922,850)	-	12.06†	.81
Total retirement wealth	$437,795	($146,369)	$1,629,021	($982,040)	-	9.99†	.75
Total assets	$797,950	($296,478)	$2,528,611	($1,193,455)	-	11.07†	.78
Debt							
Mortgages and loans for primary residence	$125,015	($84,059)	$58,222	($74,044)	-	3.80***	.39
Loans for other real estate	$24,580	($82,783)	$42,442	($168,664)	785.00; .54		.06
Taxes owed	$1,270	($2,138)	$753	($1,863)	-	1.91	.21
Credit card debt	$9,478	($16,389)	$1,570	($2,944)	-	4.81***	.48
Other loans and liabilities	$11,551	($22,254)	$4,743	($11,742)	-	1.18	.13
Total debt	$171,893	($126,548)	$107,729	($189,245)	1160.00; 3.22***		.36
Net worth	$626,057	($260,516)	$2,420,882	($1,124,756)	-	9.95*	.75

*$p < .05$; **$p < .01$ (Bonferroni corrected); ***$p < .008$ (Bonferroni corrected); †$p < .006$ (Bonferroni corrected) #Most recent year for which all householders provided earnings data. Note. Monetary values are in 2009 dollars.

TABLE 7.

Means and Standard Deviations for Variables Related to Financial Socialization by Husbands and Wives, and by Group

	Husbands						Wives					
	Low Group (n = 40)		High Group (n = 41)				Low Group (n = 40)		High Group (n = 41)			
Activity	*M*	*(SD)*	*M*	*(SD)*	*t*	*r*	*M*	*(SD)*	*M*	*(SD)*	*t*	*r*
Incidental education from significant others												
Father discussed personal finance in general conversation	2.03	(.95)	2.00	(.89)	.12	.01	2.23	(1.19)	2.32	(1.21)	.35	.04
Mother discussed…	1.93	(.92)	2.05	(.84)	.64	.07	2.17	(1.01)	2.44	(1.14)	1.10	.12
Romantic partner(s) discussed…	3.83	(.78)	3.59	(.87)	1.31	.15	3.98	(.92)	4.24	(.77)	1.43	.16
Friends and colleagues discussed…	2.75	(.71)	2.85	(.65)	.69	.08	2.58	(.75)	2.51	(.81)	.36	.04
Guidance and instruction from significant others												
Father talked to me about how to manage my finances effectively	2.08	(1.00)	1.85	(.94)	1.03	.12	2.08	(1.29)	2.29	(1.31)	.75	.08
Mother talked to me…	1.98	(1.00)	1.95	(.89)	.13	.02	2.05	(1.06)	2.12	(1.03)	.31	.04
Romantic partner(s) talked to me…	3.40	(.98)	3.46	(.90)	.30	.03	3.58	(1.08)	4.12	(.81)	2.57*	.28

*p < .017 (Bonferroni corrected) Note. Response scale had five points ranging from 1 (never) to 5 (always)

TABLE 8.
Frequency Distributions for Variables Related to Lifetime Financial Socialization by Husbands and Wives, and by Group

	Husbands							Wives						
	Low Group (n = 40)		High Group (n = 41)					Low Group (n = 40)		High Group (n = 41)				
Activity	No	Yes	No	Yes	χ^2	p	V	No	Yes	No	Yes	χ^2	p	V
Education from formal institutions														
Did you receive any education about personal finances at high school?	28	12	30	11	.10	.752	.04	29	11	35	6	2.02	.155	.16
…at a post high school institution (e.g., a college)?	21	19	17	24	.99	.320	.11	32	8	34	7	.12	.735	.04
…later in life?	16	24	18	23	.13	.722	.04	20	20	25	16	.99	.320	.11
Education via employers														
Ever received education from an employer about personal finance?	17	23	9	32	3.92	.048	.22	24	16	24	17	.02	.893	.02
Ever been referred by an employer to financial professional?	17	23	14	27	.60	.439	.09	32	8	22	19	6.32	.012*	.28

*p < .025 (Bonferroni corrected)

TABLE 9.
Means and Standard Deviations for Retirement Planning Activity Variables by Husbands and Wives, and by Group

	Husbands								Wives							
	Low Group			High Group					Low Group			High Group				
Activity	*n*	*M*	*(SD)*	*n*	*M*	*(SD)*	*t*	*r*	*n*	*M*	*(SD)*	*n*	*M*	*(SD)*	*t*	*r*
Self-directed education from significant others																
Deliberately sought out information on personal finance from parents / immediate family	40	2.15	(1.05)	41	2.44	(1.25)	1.13	.13	40	2.13	(1.16)	41	2.17	(1.12)	.18	.02
…from romantic partner(s)	40	3.18	(1.26)	41	3.27	(1.03)	.37	.04	40	3.43	(1.13)	41	3.78	(1.11)	1.43	.16
…from friends and colleagues	40	2.63	(.90)	41	2.88	(1.01)	1.20	.13	40	1.98	(.86)	41	2.22	(1.08)	1.12	.13
…from employer(s)	40	2.03	(.92)	41	2.61	(1.16)	2.52	.27	40	1.45	(.85)	41	2.05	(1.12)	2.80**	.30
Self-directed education via media																
Deliberately sought out information on personal finance from books	40	2.63	(1.17)	41	2.93	(1.44)	1.04	.12	40	1.93	(1.07)	41	2.00	(1.16)	.30	.03
…from newspapers and magazines	40	3.13	(1.34)	41	3.44	(1.38)	1.04	.12	40	2.13	(.99)	41	2.51	(1.34)	1.48	.16
…from television	40	2.53	(.93)	41	2.95	(1.24)	1.74	.19	40	1.88	(1.02)	41	2.00	(.81)	.61	.07
…from the internet	40	2.48	(.99)	41	3.12	(1.33)	2.49	.27	40	1.70	(.99)	41	1.71	(1.10)	.03	<.01
…from radio	40	2.33	(.92)	41	2.34	(1.18)	.07	<.01	40	1.78	(.97)	41	2.02	(1.08)	1.09	.12
Retirement forecasting																
Amount required to retire forecasted	40	2.58	(1.13)	41	3.78	(.88)	5.36*	.52	40	2.15	(1.05)	40	2.75	(1.19)	2.39*	.26

*$p < .05$; **$p < .013$ (Bonferroni corrected) Note. Response scale had five points ranging from 1 (never) to 5 (always)

TABLE 10.

Means and Standard Deviations for Financial Behaviors by Husbands and Wives, and by Group

	Husbands									Wives								
	Low Group			High Group						Low Group			High Group					
Behavior	*n*	*M*	*(SD)*	*n*	*M*	*(SD)*	*U; z*	*t*	*r*	*n*	*M*	*(SD)*	*N*	*M*	*(SD)*	*U; z*	*t*	*r*
Cash-flow management																		
Paid bills on time	40	4.70	(.61)	41	4.83	(.67)	924.50; 1.55	-	.17	40	4.68	(.57)	41	4.95	(.22)	1007.50; 2.78*	-	.31
Kept financial records / tracked spending	40	3.78	(1.23)	41	3.51	(1.34)	-	.92	.10	40	3.45	(1.47)	41	3.46	(1.47)	-	.04	.01
Reconciled checkbook each month	40	3.68	(1.49)	41	3.78	(1.54)	-	.31	.04	40	3.75	(1.32)	41	4.07	(1.39)	-	1.08	.12
Planned upcoming spending	40	3.45	(1.01)	41	3.32	(1.33)	-	.51	.06	40	3.23	(1.07)	41	2.83	(1.43)	-	1.41	.16
Credit management																		
Paid credit card in full each month	40	3.53	(1.32)	41	4.49	(.87)	1229.00; 4.10**	-	.46	40	3.43	(1.20)	41	4.49	(.90)	1254.50; 4.35**		.48
Reviewed my credit report annually	40	2.65	(1.37)	41	2.98	(1.41)	-	1.06	.12	40	2.53	(1.34)	41	2.29	(1.37)	-	.77	.09
Compared offers between credit cards	40	3.40	(1.19)	41	3.32	(1.56)	-	.27	.03	40	3.20	(1.34)	41	3.17	(1.58)	-	.09	.01
Saving behaviors																		
Owned and saved into savings account(s)	40	3.85	(1.17)	41	4.51	(.90)	1088.00; 2.82***	-	.31	40	3.65	(1.08)	40	4.35	(.95)	-	3.09***	.33
Built and maintained an emergency fund	40	3.50	(1.26)	41	4.27	(.98)	-	3.07***	.33	40	3.45	(1.22)	40	4.10	(1.36)	-	2.26	.25
Saved money out of each paycheck	40	3.38	(1.23)	41	4.49	(.81)	-	4.77***	.47	40	3.35	(1.12)	41	4.15	(1.11)	-	3.21***	.34
Saved for long-term goals (e.g., a car)	40	3.23	(1.07)	41	4.27	(1.00)	-	4.53***	.45	40	2.98	(1.23)	40	3.95	(1.20)	-	3.59***	.38

Paid extra towards mortgage principal	40	2.35	(1.15)	41	3.15	(1.48)	-	2.71***	.29	40	2.25	(1.21)	40	3.20	(1.34)	-	3.32***	.35
Investment behaviors																		
Spread money over different investments	40	3.73	(1.26)	41	4.00	(1.05)	-	1.07	.12	40	2.93	(1.47)	40	3.38	(1.46)	-	1.37	.15
Calculated net worth	40	2.73	(1.20)	41	3.66	(1.15)	-	3.57**	.37	40	1.93	(1.12)	40	2.45	(1.43)	-	1.83	.20
Consulted with financial professional	40	2.33	(1.02)	41	2.51	(1.05)	-	.81	.09	40	2.08	(1.00)	40	2.48	(1.15)	-	1.66	.19
Comparison shopping																		
Compared investments before acquiring	40	3.28	(1.45)	41	3.90	(1.18)	-	2.13	.23	40	2.10	(1.34)	40	2.75	(1.52)	-	2.04	.23
Comparison shopped for major purchases	40	4.50	(.60)	41	4.51	(.78)	866.00; .50	-	.06	40	4.60	(.71)	40	4.50	(.82)	744.00; .65	-	.07

*$p < .013$ (Bonferroni corrected); **$p < .017$ (Bonferroni corrected); ***$p < .01$ (Bonferroni corrected) Note. Response scale had five points ranging from 1 (never) to 5 (always)

TABLE 11.
Regression of Household Net Worth on Husbands' Engagement in Various Financial Behaviors after Controlling for Household Education Level, Employment Sector, and Lifetime Income.

Financial Behavior	*B (SE)*	*β*	ΔR^2
Forecasted amount required to retire	.35 (.06)	.51***	.20***
Paid credit card in full each month	.26 (.07)	.36***	.10***
Owned and saved into savings account(s)	.25 (.07)	.33***	.09***
Built and maintained emergency fund	.24 (.07)	.35***	.09***
Saved money out of each paycheck	.28 (.06)	.42***	.14***
Saved for long-term goals (e.g., a car)	.27 (.06)	.38***	.12***
Paid extra towards mortgage principal	.11 (.05)	.18*	.03*
Calculated net worth	.23 (.06)	.36***	.11***

Note. The outcome variable, the natural log of household net worth, was a continuous variable. Step 1 included three control variables. The first was household education level, which was dummy coded to represent four education levels: At least one householder graduated high school or equivalent or at least one householder received an associate's degree or equivalent (baseline category); at least one householder received a bachelor's degree or equivalent; one householder received post-college training; and both householders received post-college training. The second was household employment sector, which was dummy coded to represent three employment sector levels: No householder employed in public sector (baseline category); one householder employed in public sector; and both householders employed in public sector. The third was household lifetime income, which was a continuous variable. For step 1, $R^2 = .41$ ($p < .001$). Step 2 of each analysis included a financial behavior variable (e.g., forecasted amount required to retire); each variable was continuous. $n = 81$ *$p < .05$; ***$p < .001$

TABLE 12.
Regression of Household Net Worth on Wives' Engagement in Various Financial Education Activities and Behaviors after Controlling for Household Education Level, Employment Sector, and Lifetime Income.

	Financial Education Activity or Behavior	*n*	*B (SE)*	β	ΔR^2
1	Talked to romantic partner(s) about how to manage my finances effectively[†]	81	.20 (.07)	.24**	.06**
2	Referred by an employer to a financial professional[†]	81	.21 (.17)	.13	.01
3	Deliberately sought out information on personal finance from employers[†]	81	.14 (.07)	.17	.03
4	Forecasted amount required to retire [††]	80	.16 (.06)	.23*	.05*
5	Paid bills on time[†]	81	.40 (.18)	.23*	.04*
6	Paid credit card in full each month[†]	81	.25 (.06)	.36***	.11***
7	Owned and saved into savings account(s)[††]	80	.20 (.07)	.26**	.06**
8	Saved money out of each paycheck[†]	81	.15 (.06)	.22*	.04*
9	Saved for long-term goals (e.g., a car)[††]	80	.17 (.06)	.28**	.07**
10	Paid extra towards mortgage principal[††]	80	.11 (.06)	.18	.03

Note. The outcome variable, the natural log of household net worth, was a continuous variable. Step 1 included three control variables. The first was household education level, which was dummy coded to represent four education levels: At least one householder graduated high school or equivalent or at least one householder received an associate's degree or equivalent (baseline category); at least one householder received a bachelor's degree or equivalent; one householder received post-college training; and both householders received post-college training. The second was household employment sector, which was dummy coded to represent three employment sector levels: No householder employed in public sector (baseline category); one householder employed in public sector; and both householders employed in public sector. The third was household lifetime income, which was a continuous variable. [†]For step 1, $R^2 = .38$ ($p < .001$). [††]For step 1, $R^2 = .41$ ($p < .001$). Step 2 included a financial education activity or behavior variable. Each variable was continuous with the exception of variable 2, which was dichotomous (i.e., no/yes). *$p < .05$; **$p < .01$; ***$p < .001$